

Ark in the Park

2016 Kōkako Census Report



Photo courtesy of Mark Darin

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Contents

1. Summary	3
2. Translocations	3
3. Methods.....	3
4. Census results.....	4
5. Discussion and Recommendations	11
6. Acknowledgements.....	11
7. References.....	12
8. Appendices.....	13

1. Summary

Auckland Zoo (AZ) conducted a 2016 census of North Island kōkako (*Callaeas wilsoni*) in Ark in the Park (AiP) from mid-August to end of October. The census was completed in accordance with DOC Standard Operating Procedures (Flux and Innes, 2001). A combination of walk-through surveys and automated sound recorders were used to identify areas with birds. Once identified, zoo staff and dedicated volunteers followed the birds to determine whether they were paired or single birds and if each individual was colour banded or unbanded. By the end of the census period, 23 founders (11 of which were birds translocated to AiP in spring 2015 and autumn 2016) and 13 unbanded birds were identified. Among the birds identified, 11 pairs (which included 16 founders) and 4 unbanded singles were confirmed as territorial and the others as either floating or not enough information gathered to determine if they were holding a territory.

2. Translocations

In addition to the eleven kōkako translocated to AiP between August and September 2015 from Mangatutu Ecological Area and Mapara Wildlife Refuge, AiP received another ten kōkako (four pairs and two single birds) from Mapara Wildlife Refuge in May 2016 as outlined in Table 1 below.

Table 1. Summary of 2015 kōkako translocations to AiP.

No.	Sex	Band combo	Name	Source	Capture Site	Release Date
1	M	YM-GR	Frances	Mapara	M032	12/05/2016
2	?	YM-GO	To be confirmed	Mapara	M032	12/05/2016
3	M	YM-RL	To be confirmed	Mapara	Edge Pr 1	14/05/2016
4	F	YM-RY	Zelah	Mapara	Edge Pr 1	14/05/2016
5	F	YM-RG	Bryda	Mapara	Wino	15/05/2016
6	M	YM-RO	To be confirmed	Mapara	Wino	15/05/2016
7	M	YM-RB	To be confirmed	Mapara	Hebe Pr01	18/05/2016
8	M	/-YM	Tahi Kaha	Mapara	Solo Pr01	19/05/2016
9	F	YM-OW	Aroha	Mapara	Solo Pr01	19/05/2016
10	F	YM-OG	Graeme	Mapara	Hebe Pr01	20/05/2016

(Information sourced from Bryden, 2016)

3. Methods

Census

The 2016 census of AiP, which commenced mid-August and was completed by the end of October, was conducted using a combination of the following two methods: walk-through survey and automated sound recorders. The walk-through survey protocol, as stipulated by Department of Conservation Standard Operating Procedures, involved surveyors walking along bait lines, in parallel with other surveyors when possible, and stopping at 200m intervals to listen for birds or trigger a response from birds using a standard playback sequence (see *Playback*) played with a handheld Foxpro NX4 speaker system. Three-hundred and seventy five sites within the management area and ten sites outside of the management

are were sampled in this manner. Another circa seventy sites were sampled using recorders to detect kōkako calls in R, F and AN blocks.

For birds to be included in the territorial count, they had to meet the following Flux and Innes field criteria:

- 1) For banded kōkako which are previously known to be territorial in same place as the 2015 census, surveyors had to confirm ID of bands within the known territory and have at least a 15 minute follow.
- 2) For newly banded individuals such as recently translocated individuals; pairs with an unbanded member; banded or unbanded birds in a new location, surveyors had to have two 10 minute follows each at the same location that cross each other; or one follow of at least 30 minutes in which one bird of the pair sings full song.

As approved by the Kōkako Specialist Group (KSG), the most northern blocks of AiP (L, B, U and P) were not surveyed (by either foot or automated recorders) as part of the 2016 census since no kōkako have been detected in these areas in previous census years. In total, 504 AZ staff hours and about 200 AiP volunteer hours were spent in the field conducting the census.

Playback

The standard playback used at each interval of the walk-through survey for the 2016 census (as part of the set protocol for the walk-through survey) as follows:

- 1) 3 mew calls, followed by a 5 minute listening period
- 2) 3 mew calls, followed by a 5 minute listening period
- 3) 30 seconds of AiP dialect song, followed by a 5 minute listening period

Recorders

Recorders were used only in R, F and AN blocks for the 2016 census, but also sampled other areas of AiP throughout the year (see Appendix A). The recorders used are either designed and built by Eric Wilson or designed and sourced from DOC. A total of fourteen recorders (divided into two groups of seven) were rotated in the field on a weekly basis by AiP volunteer Kevin Ferguson. For the deployed week, each recorder began recording about 30 minutes before sunrise for two hours per day. The recordings were then downloaded off the recorders and analysed using the audio editing program, Audacity. Through specific settings, Audacity generates a spectrogram, which provides a visual representation of the unique sound spectrum for each type of bird call.

4. Census Results

The 2016 census of kōkako in AiP (see Figure 1) commenced mid-August with follow up tasks completed by end of October at which point 13 unbanded birds and 23¹ of the 47 founders to date were identified (see Table 2). In regards to the 21 birds translocated to AiP since the 2015 census, a total of eleven (8 from Mapara and 3 from Mangatutu) were identified. Fifty percent of the founders identified were sighted more than 200m from the AiP

¹ The 23rd founder Graeme (YM-OG), a single female Mapara translocated in May 2016, was identified along Cutty Grass track and around the Cutty Grass parking lot in beginning of November after the 2016 census concluded. She was paired with an unbanded bird, single 4.

boundary into the management area (see Table 3) with the other fifty percent sighted within 200m of the AiP boundary and/or outside of AiP (see Table 4). Of the 35 birds identified in total (see Figure 2), 11 pairs and 4 singles were confirmed as territorial (see Figure 3) and the other birds as either floating or not enough information was able to be gathered to determine if they were holding a territory.

The 11 territorial pairs consisted of four previously confirmed founder pairs (Maurice/Kowhai, Pierre/Sophie, Totara/Puke², and Karen/Sylvain), two founder pairs recently translocated from Mapara (Aumangea/Thurley³ in September 2015 and Tahī Kaha/Aroha in May 2016), two unbanded pairs (IW10 pair and IW12 pair) and three founders paired with unbanded birds (Marty, Dylan and Kiwitea). Marty was previously paired with Manuka in the 2015 census, Dylan was last seen in October 2014 as a floating single and Kiwitea was a single Mangatutu female translocated in September 2015. The four territorial singles were all unbanded birds. However, following the census, single 4 was subsequently paired with Graeme (see footnote 1).

In addition to the confirmed territorial birds, another 8 birds were identified as either floating or appeared to be paired up, but surveyors could not positively determine if they were holding a territory together or not. Gordon, Frances, Zelah, Bryda and Rata all appeared to be floating. Despite recall attempts, Gordon was only sighted once along the new KOK access line and Frances, Zelah and Bryda were also only sighted once without their translocated partners from Mapara. Rata was initially confirmed in her previously held territory in T-block, but was later observed multiple times in Aumangea/Thurley's territory along with a juvenile. A second juvenile was also observed with the IW12 pair. Grace and Rereahu both appeared to be paired with unbanded birds (Grace in the territory she previously held with Kiekie and Rereahu about 150m south of Remus Roe stream) but neither pair could be recalled in subsequent visits.

Several banded birds seen during the 2015 census were not identified during the 2016 census. As previously mentioned, Manuka was no longer paired with Marty nor was Kiekie with Grace and neither was sighted in any of the other surveyed areas. Maurice/Kowhai's banded progeny, Andy and Hinau, and the new founders Te Ariki and Ranginui could not be located either.

As in previous years, the majority of identified birds were sighted in the southern part of AiP, mainly in AWS, KOK and IW block. Although, a few birds were sighted in AWN, K and T block and Karen/Sylvain were still holding the same territory in D block. Territorial birds in the southern part of KOK and IW blocks were often observed moving in and out of the management area with their territories extending upwards of 200m beyond the boundary line. These observations warrant consideration of extending the management area further south in the future.

² Totara/Puke were sighted multiple times in their long-held territory during the 2016 census, but could not be located by surveyors during 2016 nest searching. At last investigation, their territory appeared to be occupied by a new unbanded pair.

³ Like Totara/Puke, Aumangea/Thurley were sighted multiple times during the during the 2016 census, but could not be located by surveyors during 2016 nest searching.

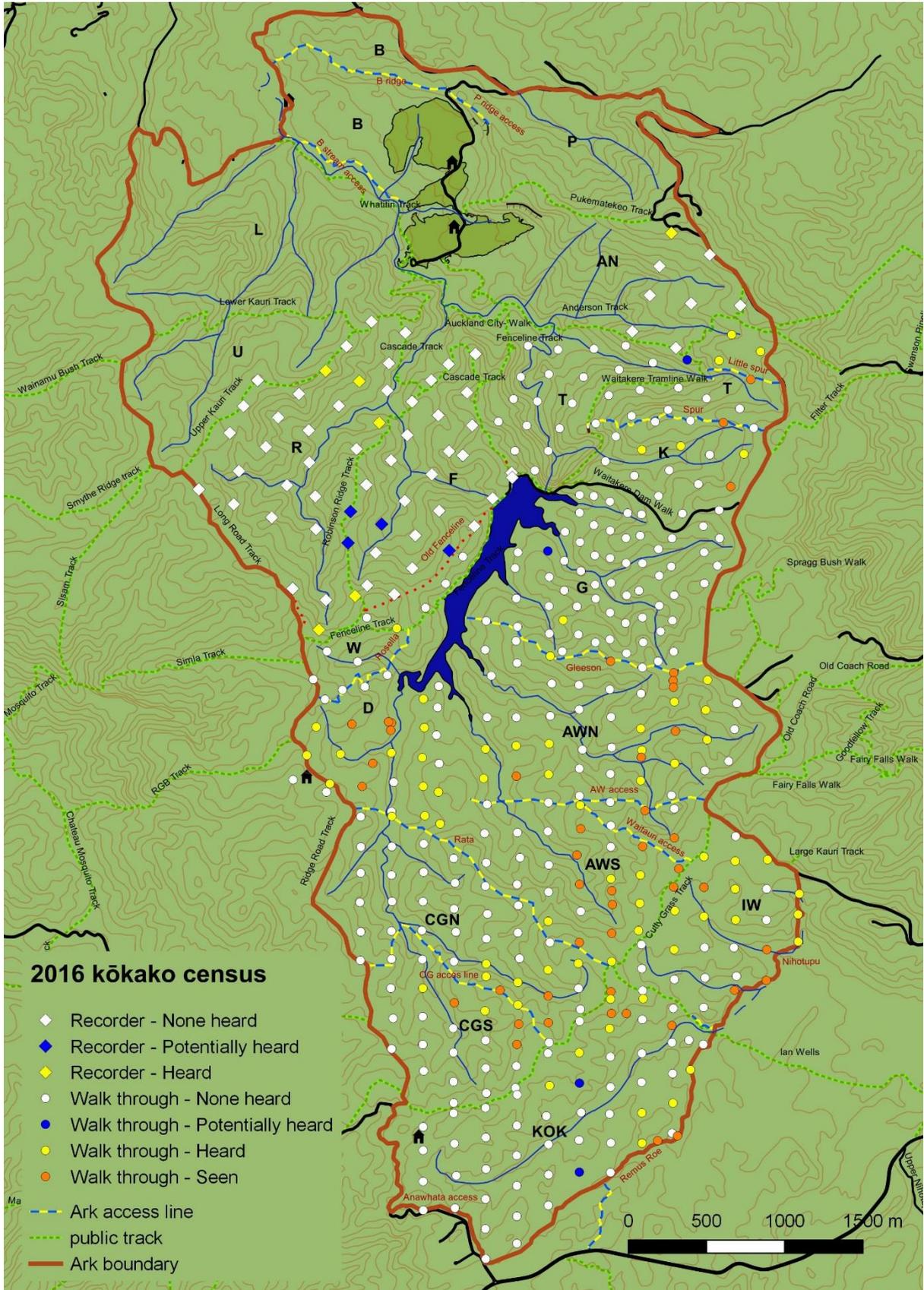


Figure 1. 2016 census results for Aipā

Table 2. Summary of AiP banded kōkako population at end of 2016 census

Name	Sex	Band Combo	Status	Source
Maurice	M	M-RG	Pair seen 2016 census	Waipapa site 7
Kowhai	F	M-RLg	Pair seen 2016 census	Waipapa site 6
Totara	M	M-WG	Pair seen 2016 census	Waipapa site 5
Puke	F	M-WY	Pair seen 2016 census	Waipapa site 7
Karen	F	M-RW	Pair seen 2016 census	Waipapa site 4
Sylvain	M	M-WR	Pair seen 2016 census	Tunawae-middle pair
Tahi Kaha	M	/-YM	Pair seen 2016 census	Mapara
Aroha	F	YM-OW	Pair seen 2016 census	Mapara
Thurley	F	YM-YR	Pair seen 2016 census	Mapara
Aumangea	M	YM-YG	Pair seen 2016 census	Mapara
Pierre	M	M-YR	Pair seen 2016 census	Tunawae - pair
Sophie	F	M-GY	Pair seen 2016 census	Tunawae - pair
Dylan	M	M-YW	Paired with unbanded bird 2016 census	Tunawae
Marty	M	M-YG	Paired with unbanded bird 2016 census	Waipapa
Kiwitea	F	YM-GB	Paired with unbanded bird 2016 census	Mangatutu
Grace	F	M-GW	Seen with unbanded bird 2016 census	Tunawae-Rain
Rereahu	M	YM-LR	Seen with unbanded bird 2016 census	Mangatutu
Rata	F?	M-BR	Seen 2016 Census	Mapara-Rain1 (South)
Gordon	M	YM-YB	Seen 2016 Census	Mangatutu
Frances	M	YM-GR	Seen 2016 Census	Mapara
Zelah	F	YM-RY	Seen 2016 Census	Mapara
Bryda	F	YM-RG	Seen 2016 Census	Mapara
Graeme	F	YM-OG	Seen with unbanded bird after 2016 census	Mapara
To be confirmed	?	YM-GO	Released May 2016	Mapara
To be confirmed	M	YM-RL	Released May 2016	Mapara
To be confirmed	M	YM-RO	Released May 2016	Mapara
To be confirmed	M	YM-RB	Released May 2016	Mapara
Misty	?	WY-OM	Fledged January 2016	AiP
Mapere	?	WG-OM	Fledged January 2016	AiP
Manuka	F	M/YB	Paired with Marty 2015 census	Waipapa
Kiekie	?	M/YL	Paired with Grace 2015 census	Tunawae-middle pair
Hinau	?	WR/M	Seen 2015 census	AiP
Andy	?	BB/M	Seen 2015 census	AiP
Te Ariki	M	YM/YO	Released Sept 2015/Seen Nov 2015	Mapara
Ranginui	M	YM/LO	Released Aug 2015/Seen Nov 2015	Mangatutu
Pōtae	M	YM/YW	Released Aug 2015	Mangatutu
Tiriwa	F	YM/LB	Released Aug 2015	Mangatutu
Rua	F	YM/LG	Released Aug 2015	Mangatutu
Tahi	M	YM/LY	Released Aug 2015	Mangatutu
Poroporo	?	LW/M	Fledged 2013 / 2014	AiP
Duncan	M	M/RY	Last seen May 2013	Tunawae-Nth Ea access

Moby	M	OM/Y	Last seen winter 2013	Tiritiri Matangi Island
Nikau	M	M/WL	Last seen Feb 2013	Mapara- (South)
Kauri	F	M/LW	Last seen Feb 2013	Waipapa
Rhonda	F	M/GR	Last seen 2012/2013	Tunawae-Nth Ea access
Pareira	F	GL/M	Seen with Grace 2012-2013 season	Tunawae
Rimu	M	M/GB	Last seen 2012	Waipapa
Punga	F	YM/R	Last seen 2011	Tiritiri Matangi Island
Maire	F	M/BW	Last seen 2011	Mapara-Rain2 (South)
Lucy	M	M/LY	Last seen 2011	Tunawae-Owawenga
George	M	M/LR	Last seen 2011	Tunawae-Owawenga
Miro	M	R/GM	Last seen 2011	AiP
Matai	M	WB/M	Last seen 2011	AiP
Wahine	F	M/RB	Not seen since release	Waipapa site 7
Brittany	F	L/YM	Deceased Sept 2014	AiP

Table 3. Founder sightings inside AiP management area.

Name	Sex	Band Combo	2016 Sighting Information
Maurice	M	M-RG	Pair holding same territory along Cutty Grass Track as 2015 census
Kowhai	F	M-RLg	Pair holding same territory along Cutty Grass Track as 2015 census
Pierre	M	M-YR	Pair holding same territory in KOK block as 2015 census
Sophie	F	M-GY	Pair holding same territory in KOK block as 2015 census
Tahi Kaha	M	/-YM	Mapara pair translocated in May 2016, holding a territory in AWS block
Aroha	F	YM-OW	Mapara pair translocated in May 2016, holding a territory in AWS block
Dylan	M	M-YW	Paired with unbanded bird, holding a territory in KOK block
Marty	M	M-YG	Paired with unbanded bird instead of Manuka, holding same territory as 2015 census
Frances	M	YM-GR	Translocated as a Mapara pair in May 2016. Sighted once as a floating single
Zelah	F	YM-RY	Translocated as a Mapara pair in May 2016. Sighted once as a floating single
Bryda	F	YM-RG	Translocated as a Mapara pair in May 2016. Sighted once as a floating single

Table 4. Founder sightings within 200m of AiP boundary and/or outside of AiP.

Name	Sex	Band Combo	2016 Sighting Information
Totara	M	M-WG	Pair holding same territory along IW access line as 2015 census
Puke	F	M-WY	Pair holding same territory along IW access line as 2015 census
Karen	F	M-RW	Pair holding same territory in D-block as 2015 census
Sylvain	M	M-WR	Pair holding same territory in D-block as 2015 census
Thurley	F	YM-YR	Mapara pair translocated in Sept 2015, holding a territory in NE corner AWN block
Aumangea	M	YM-YG	Mapara pair translocated in Sept 2015, holding a territory in NE corner AWN block
Kiwitea	F	YM-GB	Mangatutu single translocated in Sept 2015. Paired with unbanded bird, holding a territory along Remus Roe previously occupied by unbanded pair in 2015 census
Grace	F	M-GW	Sighted once with unbanded bird in same territory as held with Kiekie in 2015 census
Rereahu	M	YM-LR	Mangatutu single translocated in Aug 2015. Sighted once with unbanded bird
Rata	F?	M-BR	First sighted in same territory as 2015 census, subsequently with Aumangea/Thurley
Gordon	M	YM-YB	Mangatutu single translocated in Sept 2015. Sighted once as a floating single
Graeme	F	YM-OG	Confirmed as paired with unbanded bird (single 4) after 2016 census

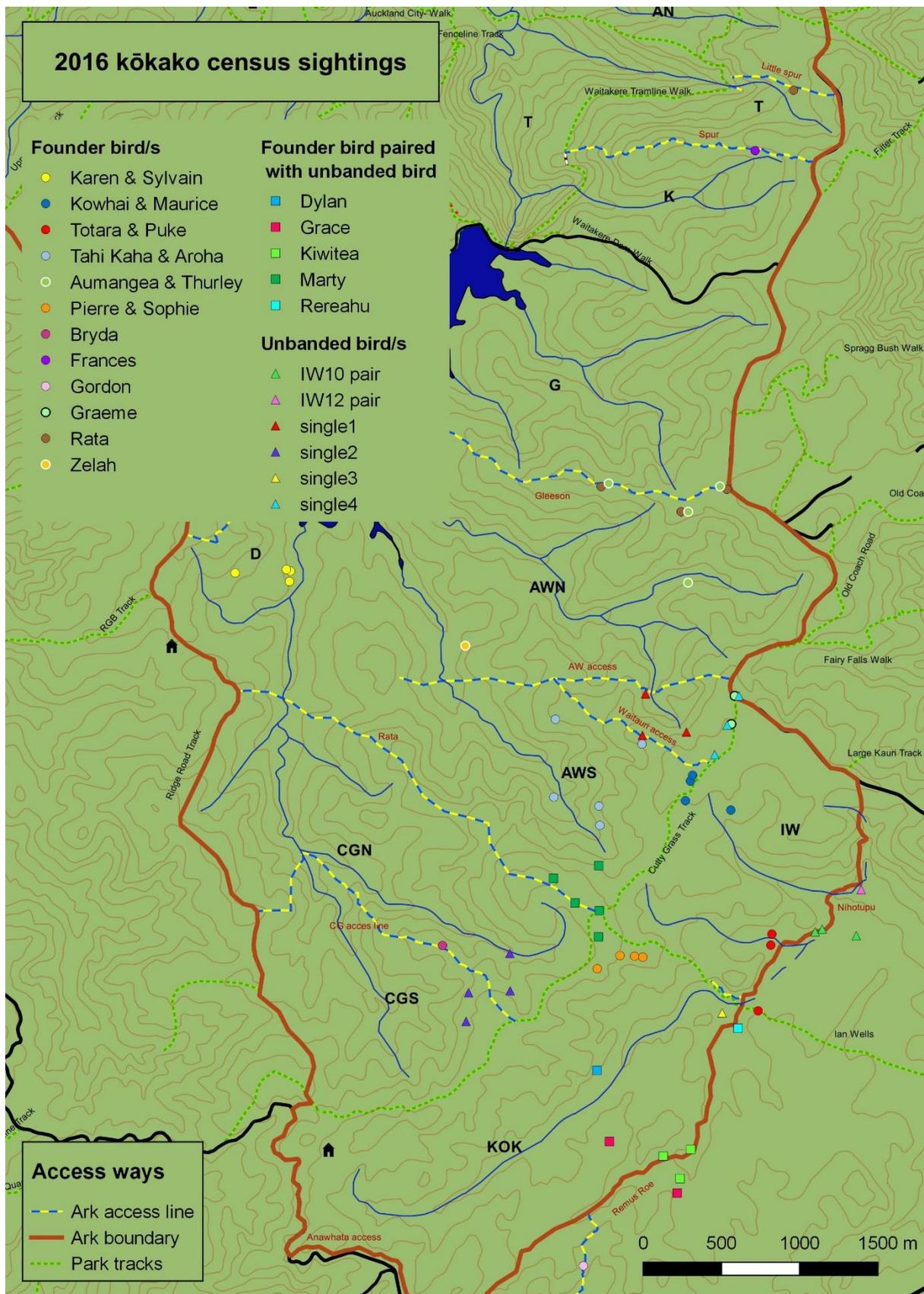


Figure 2. Locations where identified birds were seen during the 2016 census

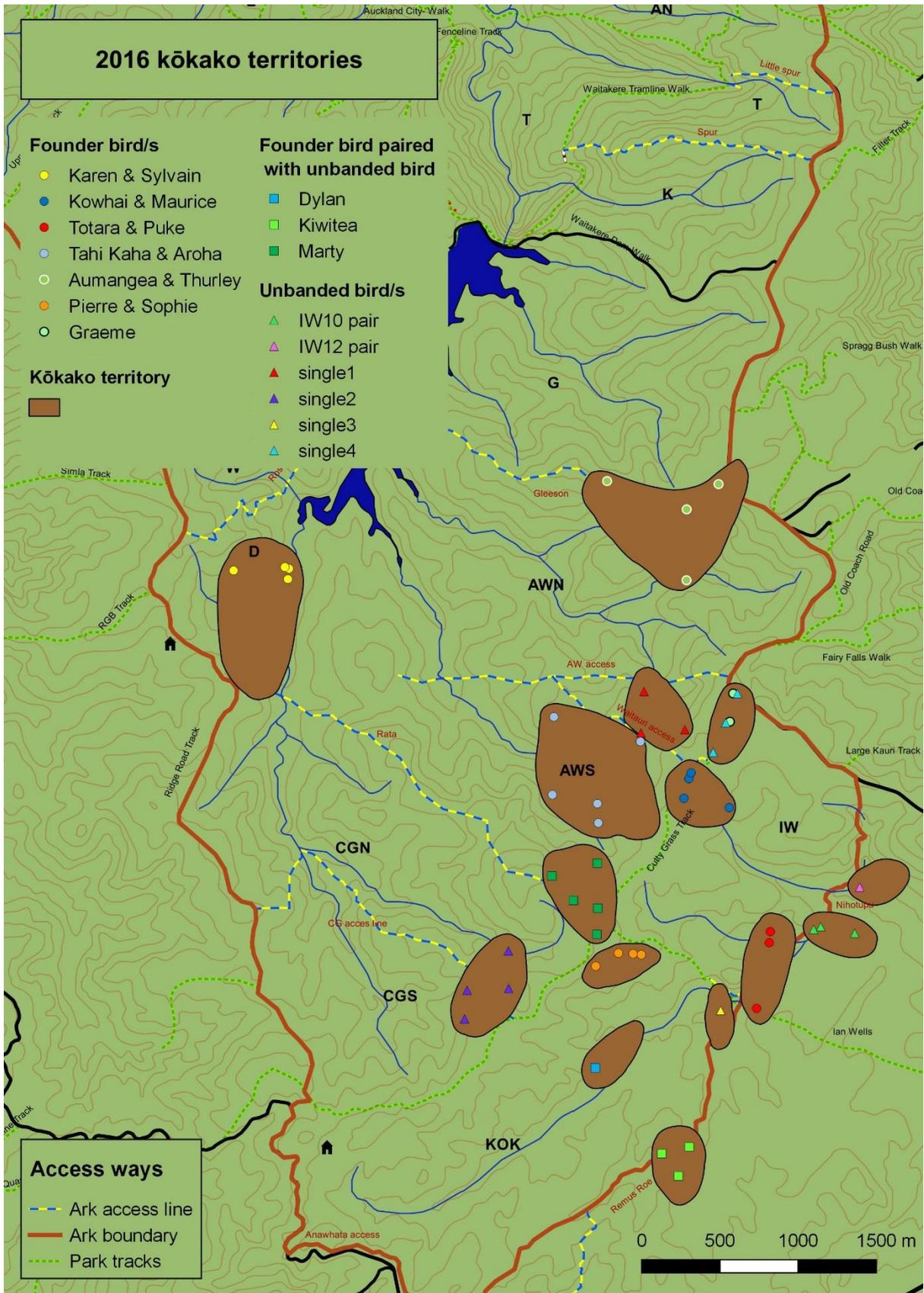


Figure 3. Locations of territories held by territorial adults

5. Discussion and Recommendations

Although it remains a challenge to follow and at times identified birds with the dense understory and thick ground cover that is prolific in AiP, surveyors continued to identify more birds during the 2016 census compared the 2015 census. This was in large part thanks to all surveyors being equipped with a Foxpro through a generous private donation. The Foxpro combined with quality recordings of local dialect and/or Mapara and Mangatutu dialect effectively elicited a response from the birds, which lured them in close enough for identification and a longer duration for a decent follow. The longer follows also developed a better understanding of territory size and boundaries for many of the pairs confirmed, though there is always more to be learned, especially for the new pairs identified.

With 11 pairs confirmed and 23 founders identified during the 2016 census, AiP must continue to work towards a genetically stable population of 25 pairs and 40 established founders as per KSG requirements for all kōkako reintroductions. Thus, it is very important that next year's census has a concise survey period and optimal coverage for surveyors to efficiently identify and confirm territorial birds.

For the 2017 census, Auckland Zoo recommends the following:

- 1) The blocks directly north of the dam (R, F, T and AN) are surveyed using sound recorders and if the KSG concurs, the most northern blocks (B, P, L, U and C) are not surveyed again since no territorial birds were detected in the blocks surveyed by sound recorders or near the blocks not surveyed.
- 2) The sound recorder survey should begin at least a month before the walk-through survey to allow time for recorders to be deployed, collected and analysed well within an acceptable time frame for surveyors to investigate areas where birds are detected.
- 3) The walk-through census period concludes before mid-October due to the early nesting behaviour observed this year and does not exceed 6 weeks, unless poor weather dictates otherwise.
- 4) More time is allocated to investigating the territorial pairs along the AiP southern boundary and further south outside of the current management area. Given the number of territories confirmed along the IW and Remus Roe Stream access lines, it is highly likely more territorial birds could be located in the areas north of Piha Road.

6. Acknowledgments

Auckland Zoo would like to thank AiP volunteers, especially Mark Darin, Kevin Ferguson and Grant Capill, and AZ Primate team for assisting with the walk-through surveys; Kevin Ferguson and Eric Wilson for the many hours spent deploying and analysing recorders; Dave Bryden for always being so supportive with advice and expertise as well as providing numerous opportunities to upskill in kōkako management; and Gillian Wadams and Laurence Bechet at Forest & Bird for providing the opportunity to be part of this project for a fourth year in a row.

7. References

Bryden, David. (2016). *Kōkako Translocationsto Sanctuary Mountain Maungataurtari, Ark in the Park, and the Hunua Ranges Regional Park 2016 Report*. Auckland Council, Auckland (unpublished internal document).

Flux, I. and Innes, J. (2001). *Kōkako management folder: Threatened species occasional publication 19*. Wellington, New Zealand: Biodiversity Recovery Unit, Department of Conservation.

8. Appendices

Appendix A

Figures 4-6 (see pg.12-15) are sound recording maps of AiP from July to December 2015 created by Eric Wilson. Each circle colour denotes different types of kōkako song recorded: Blue is no song, green is faint song only, yellow is medium volume song, and red is loud song. The density of each colour is relative to the number of days in the recording period in which kōkako song was heard (the denser colours represent recorders with the most singing).

Figures 1, 2 and 3 were created by Laurence Bechet (Forest and Bird).

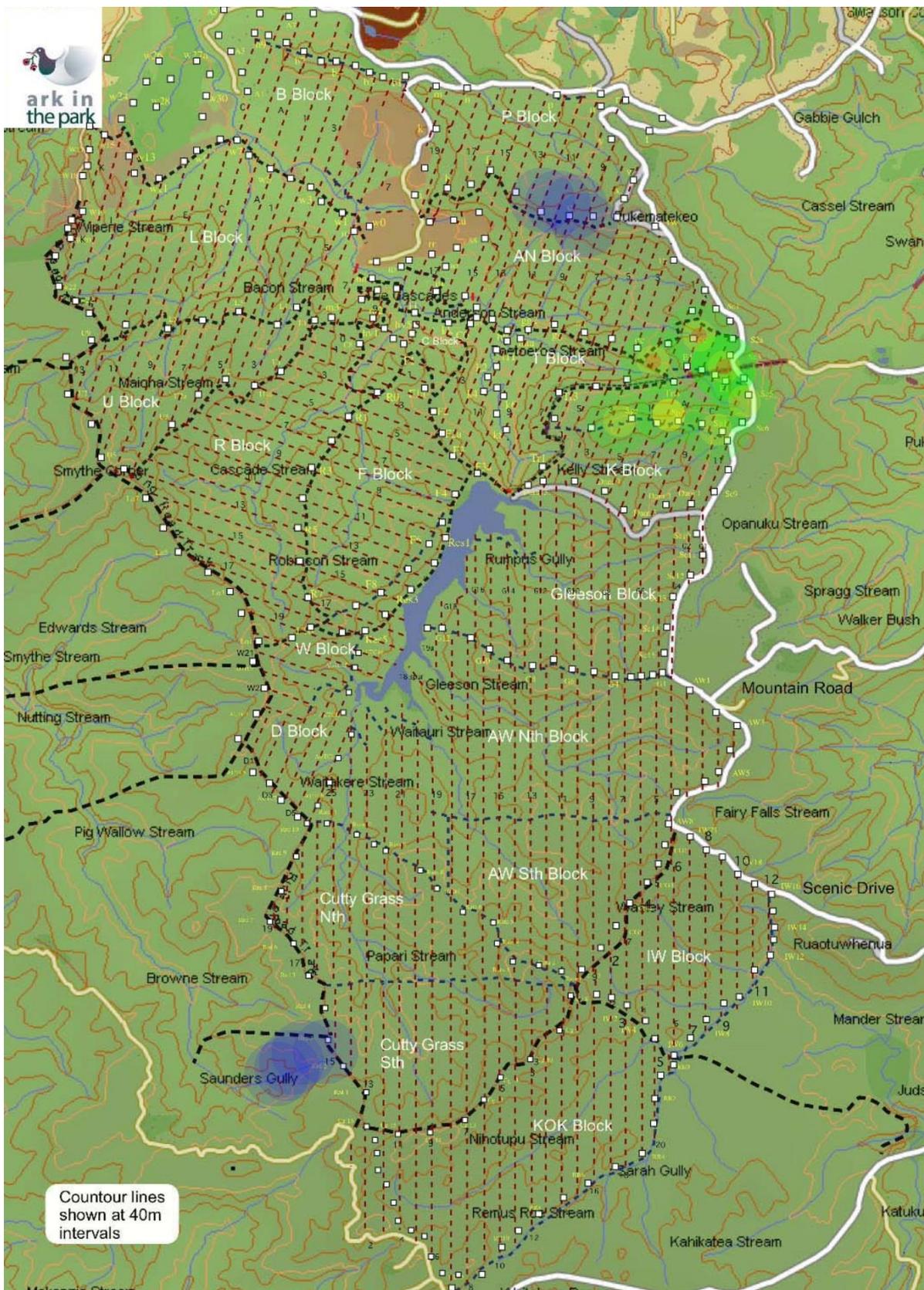


Figure 4. Sound Recording Map for January to March 2016

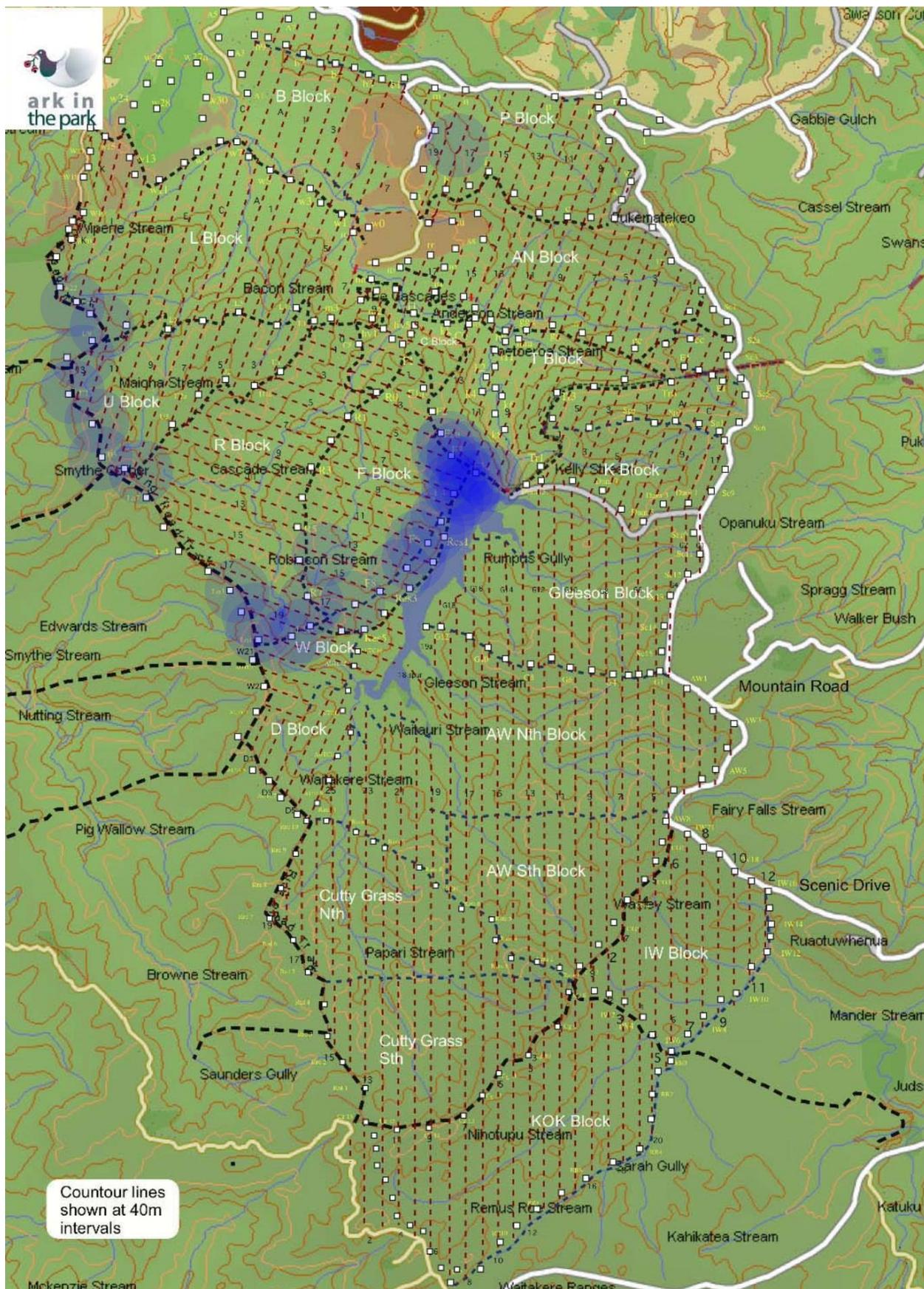


Figure 5. Sound Recording Map for April to June 2016

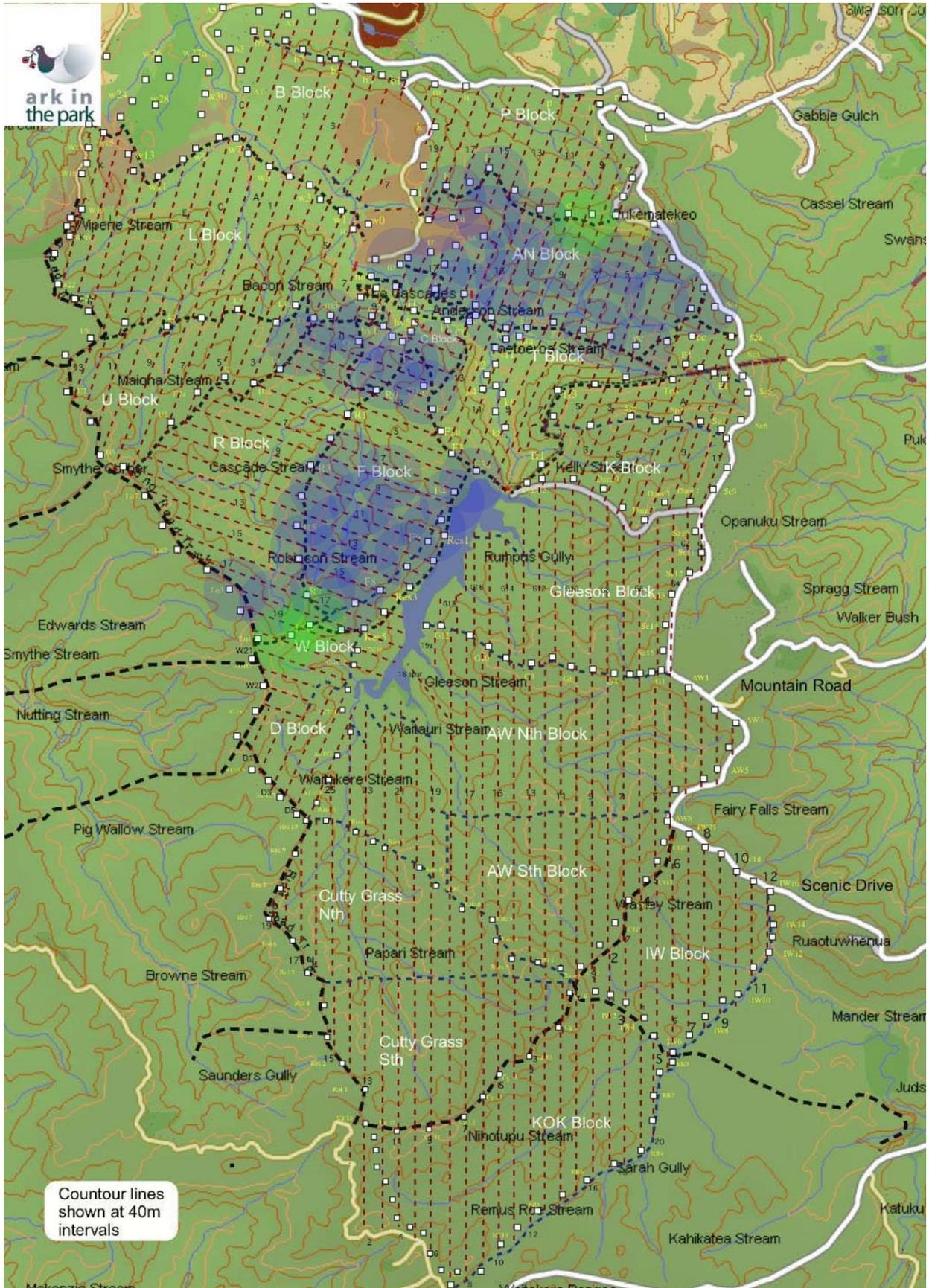


Figure 6. Sound Recording Map for July to September 2016

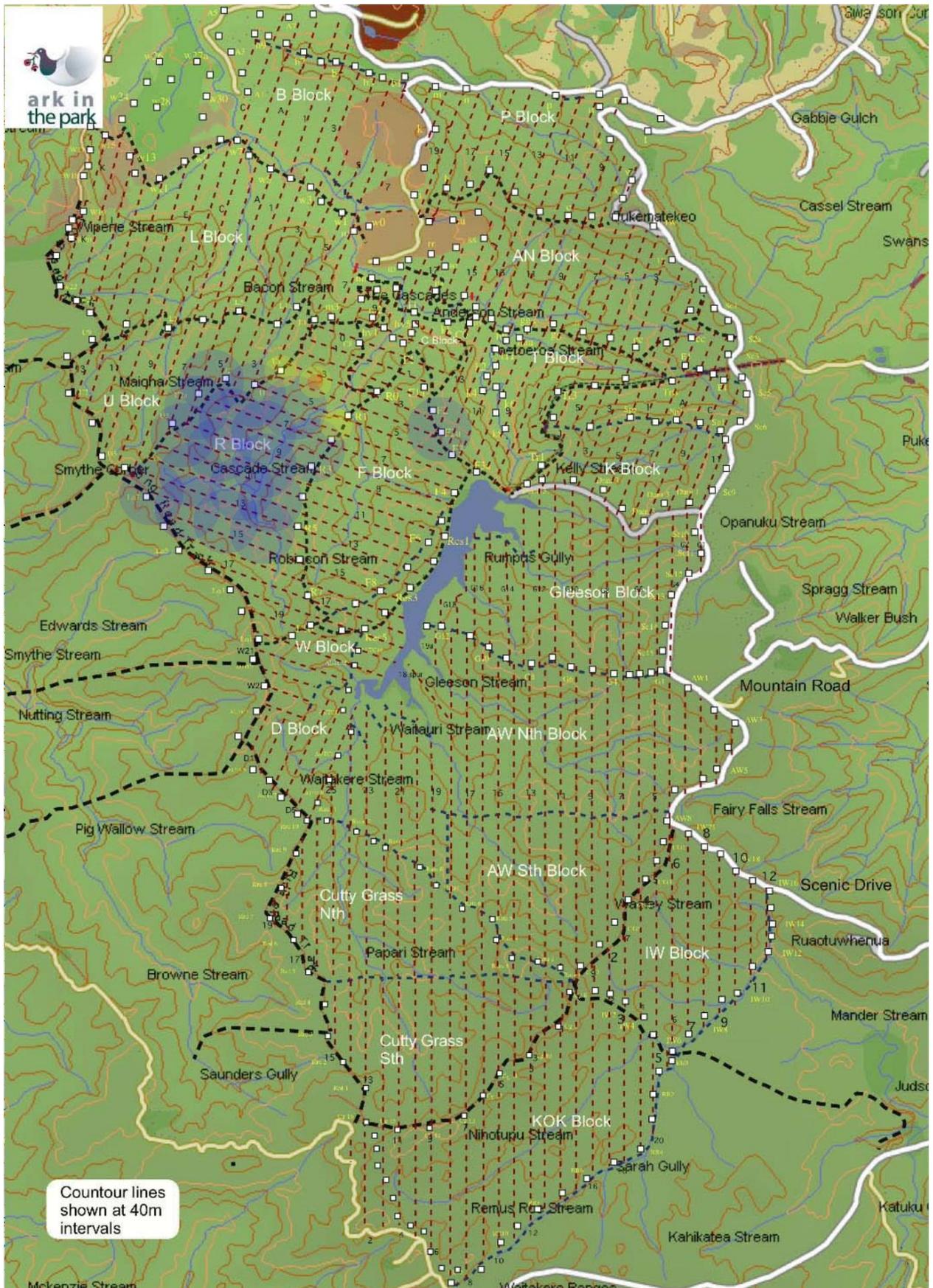


Figure 7. Sound Recording Map for October to December 2016